Motion Compensated Converter

MCC-4K

InSync technology

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MCC-4K

FOR.A ®
INNOVATIONS IN VIDEO
and AUDIO TECHNOLOGY

The MCC-4K is a universal standards converter providing exceptional quality frame rate and format conversion for UHD/3G/HD signals. MCC-4K offers support for quad link 3G-SDI of two-Sample Interleaved (2SI) or Square Division (SQD) format as well as single link 12G/6G-SDI and SFP connectivity.

UHD conversions

Motion compensated conversion from any UHD frame rate to any other UHD frame rate (4K ↔ 4K), with simultaneous UHD single link 12G/6G and UHD quad link 3G-SDI output, plus automatic detection of SMPTE ST425-5 (sample interleave input) and ITU-R BT.2020 colorimetry.

HD conversions

Motion compensated conversion from any 3G/HD-SDI frame rate to any other 3G/HD-SDI frame rate, as well as up-conversion from 3G/HD to UHD and down-conversion UHD to 3G/HD.

Applications

Live UHD frame rate conversion

MCC-4K is ideal for live frame rate conversion applications, where UHD content sourced at a chosen production frame rate needs to be converted to other frame rates for international contribution and distribution. International sports, concerts, breaking news and current affairs can all be simply and impeccably converted to the desired output format and frame rate.

Source 4K UHD 50p   Output 4K UHD 59.94p

HD/3G to UHD up-conversion

MCC-4K is perfect for integrating HD and 3G content into UHD programming. Benefiting from proprietary aperture control for up-conversion with enhancement features, MCC-4K transforms 3G/HD content into superb UHD output, offering simultaneous 4K single link 12G/6G and 4K quad link (2SI and SQD).

Source HD 50i

Output UHD 59.94p

UHD to HD/3G down-conversion

Simultaneous transmissions in UHD and HD are easy with MCC-4K. Simply configure UHD as input and choose the required HD standard output. ITU-R BT.2020 to ITU-R BT.709 conversion is available if required, as well as process amplifier and RGB color corrector.

Source UHD 59.94p

Output HD 50i

HD to HD frame rate conversion

MCC-4K also operates as an 3G/HD motion compensated standards converter, allowing its rapid redeployment for all conversion applications. Availability of loop-through reference input with genlock phase control, and timecode conversions make the MCC-4K ideal for demanding live production environments.

Source HD 50i

Output HD 59.94i

Workflow support

With both 12G/6G-SDI and SFP connectivity, as well as quad link 3G-SDI, MCC-4K can be used in a wide range of production and transmission environments, integrating simply into your workflow.
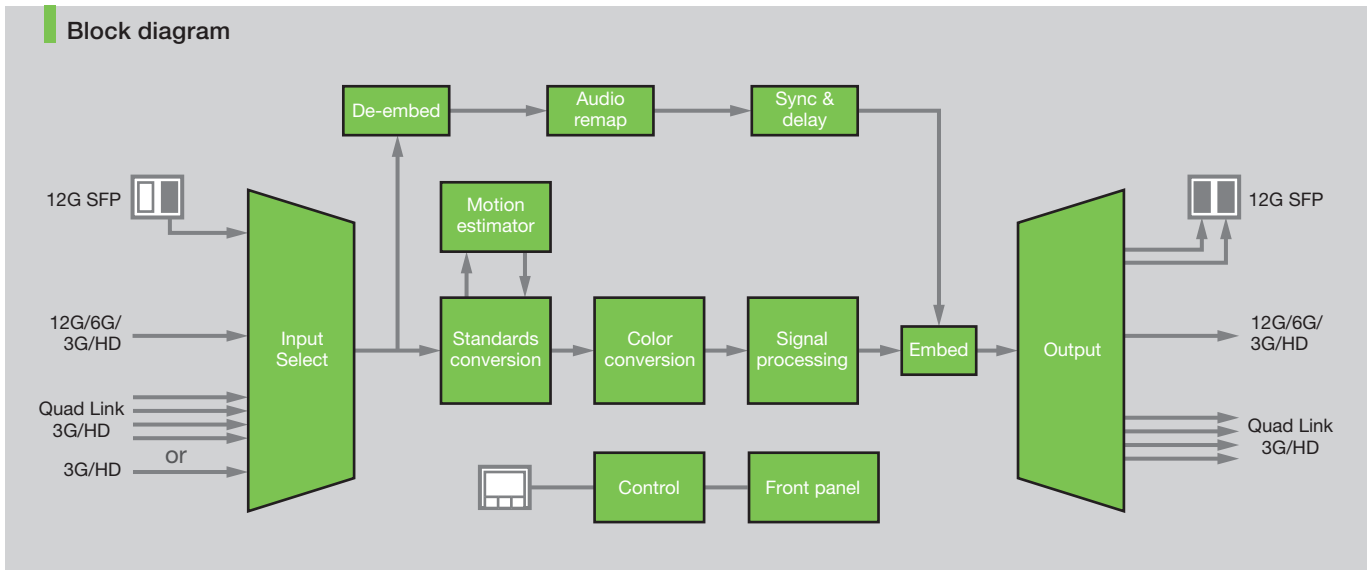
MCC-4K supports 16 channels of embedded PCM audio with a delay matched to the video delay, and straightforward tools enable audio channel remapping, synchronization and delay.

Control is available via an intuitive front panel, with video screen for confidence monitoring, with individual quadrants for square division output. Remote control is also offered via a clearly laid-out browser interface.

Key features

- Superb quality motion compensated format and frame rate conversion for all HD, 3G and UHD signals.

- All frame rates from 23.98 to 60p supported, including interlaced and PsF formats.

- Automatic input detection of SMPTE ST425-5 (sample interleave input) and ITU-R BT.2020 colorimetry.

- Selectable 2SI or SQD output.

- 16 channels of embedded PCM audio with a delay matched to the video delay.

- Confidence display on front panel (individual quadrants for square division output).

Block diagram

Specifications

Video format	12G: 2160/60p, 2160/59.94p, 2160/50p 6G: 2160/30p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p 3G: 1080/60p, 1080/59.94p, 1080/50p (Level-A/B, 2SI/SQD) HD: 1080/60i, 1080/59.94i, 1080/50i, 720/60p, 720/59.94p, 720/50p, 1080/30p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 720/30p, 720/29.97p, 720/25p, 720/24p,720/23.98p, 1080/24PsF, 1080/23.98PsF
Video input	
SDI	12G/6G/3G/HD: BNC x 1 Quad link 3G*/HD-SDI: BNC x 4, or 3G/HD-SDI: BNC x 1
SFP	12G/6G/3G/HD: 1 channel
Video output	
SDI	12G/6G/3G/HD: BNC x 1 Quad link 3G*/HD-SDI: BNC x 4 Simultaneous 12G/6G single link and quad link 3G-SDI (2SI) output
SFP	12G/6G/3G/HD: 2 channels
Audio	Passes 16 channels of PCM embedded audio. (Link 1) - Audio channel remapping - Audio delay tracks video delay
Genlock input	BB: Bi-level or Tri-level sync: 0.3 Vp-p, 75Ω, BNC x 2, loop-through (to be terminated with 75Ω terminator, if unused) - Lock to external reference with adjustable H/V offset
Colorimetry output	BT.2020 / BT.709 conversion - BT.2087 process with selectable gamma (2.0/2.4) Color legalization

Conversion modes	- Up/down/cross-conversion and synchronization
	- Any valid input to any supported 12G/6G/3G/HD output format
	- Motion compensated conversion
	  · Linear frame rate conversions for the following input/output frame rates: 59i/p / 60i/p , 29p / 30p and 23 PsF/p / 24 PsF/p
	  · Motion compensated frame rate conversion in all other modes
	- HDR conversions: PQ, HLG, S-Log3
	- HDR / SDR conversion

Processing features	Video level control (Y gain, Black level, Chroma gain) RGB color corrector (RGB Gain and Lift) Aperture control and enhancement features
Control	Front panel with short-cut keys Video confidence monitor Built-in Web control
Interface	Ethernet: 10/1000 BASE-TX, RJ-45 x 1
Temperature / humidity	0°C to 40°C / 30% to 90% (no condensation)
Power / consumption	100 V AC to 240 V AC / 70 W
Dimensions / weight	431 (W) x 88 (H) x 370 (D) mm / Approx. 6 kg

* Level-A/B 2SI/SQD support

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